



**Recommendations for the Use of Antiretroviral Drugs in
Pregnant Women with HIV Infection and Interventions to Reduce
Perinatal HIV Transmission in the United States**

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Guidance for Counseling and Managing Women Living with HIV in the United States Who Desire to Breastfeed (Last updated March 27, 2018; last reviewed March 27, 2018)

Panel's Recommendations

- Breastfeeding **is not recommended** for women living with HIV in the United States (AII).
- Women who have questions about breastfeeding or who desire to breastfeed should receive patient-centered, evidence-based counseling on infant feeding options (AIII).
- When women with HIV choose to breastfeed despite intensive counseling, they should be counseled to use harm-reduction measures to minimize the risk of HIV transmission to their infants (BIII).

Rating of Recommendations: A = Strong; B = Moderate; C = Optional

Rating of Evidence: I = One or more randomized trials with clinical outcomes and/or validated laboratory endpoints; II = One or more well-designed, nonrandomized trials or observational cohort studies with long-term clinical outcomes; III = Expert opinion

Avoidance of breastfeeding is the standard, strong recommendation for women living with HIV in the United States, because

- Maternal antiretroviral therapy (ART) reduces but does not eliminate the risk of HIV transmission via breast milk;
- Safe and affordable infant feeding alternatives are readily accessible in the United States; and
- There is a paucity of safety data on most modern ART regimens during breastfeeding.

The recommendations in the United States differ from those in many low- and middle-income countries, where cost limits access to formula and where inadequate quantities of formula and/or unsafe water mixed into formula have been associated with high rates of infant mortality.¹ Women from areas in the United States without access to safe water may face similar challenges. Infant replacement feeding using formula, banked breast milk, or a properly screened HIV-negative wet nurse remains the only way to eliminate the risk of HIV transmission through infant feeding. However, women may face environmental, social, familial, and personal pressures to consider breastfeeding, despite the risk of HIV transmission via breast milk.²⁻⁴

A qualitative study of mothers living with HIV in Canada found that infant feeding is a social, cultural, and emotional issue, often underpinned by HIV-related stigma.⁴ Some women, especially those from a country or cultural background where breastfeeding is the norm, fear that not breastfeeding will lead to disclosure of their HIV status.² Multiple experts have called for a patient-centered, harm-reduction approach to counseling women living with HIV on infant feeding options in high-resource countries.^{2,5,6} This section of the guidelines is intended to provide tools to help providers counsel women living with HIV on the potential risks associated with breastfeeding and to provide a harm-reduction approach for women who choose to breastfeed despite intensive counseling. **This section is not intended to be an endorsement of breastfeeding, nor is it a recommendation to breastfeed for women living with HIV in the United States.**

Breastfeeding and Strategies to Reduce Risk of HIV Transmission

Both the evidence regarding the risks of HIV transmission via breastfeeding and the strategies to reduce this type of transmission come from studies conducted in low- and middle-income countries, where rates of infant mortality are high and many families do not have access to safe water and affordable formula. Without maternal ART and infant antiretroviral (ARV) prophylaxis, the risk of a woman with HIV transmitting the virus to a breastfeeding infant is 15% to 20% over 2 years.^{7,8}

Studies have shown that maternal ART throughout pregnancy and breastfeeding and infant ARV prophylaxis during breastfeeding can reduce, but not eliminate, the risk of HIV transmission through breast milk.^{9,13} However, most of these studies only provided ARV drugs to women or their infants through 6 months postpartum and collected limited data on maternal plasma HIV viral load during breastfeeding.

As ART has become more widely available for women during pregnancy and the postpartum period, studies have looked at women who started ART earlier in pregnancy and continued ART longer than in previous studies. A study of women with CD4 T lymphocyte cell counts ≥ 350 cells/mm³ compared extended infant nevirapine to maternal ART, with both treatments continued through cessation of breastfeeding or 18 months postpartum, whichever came first. This study estimated transmission rates of 0.3% at 6 months and 0.6% at 12 months in both arms.¹⁴ Importantly, cases of HIV transmission via breastfeeding have occurred despite undetectable maternal plasma viral loads.¹⁵

Prior to the current accessibility of ART in low-income countries, studies demonstrated that exclusive breastfeeding during the first 6 months of life is associated with lower HIV transmission than mixed feeding (a term used to describe infants fed breast milk plus other liquid or solid foods, including formula).^{16,17} After 6 months, when complementary foods are required for adequate infant nutrition, demand for breast milk decreases and gradual weaning can occur. Rapid weaning over several days is not recommended. Studies from low-income countries that were conducted before ART was widely accessible for breastfeeding women observed the potential for increased HIV shedding into breast milk and an increased risk of HIV transmission during rapid weaning.¹⁸⁻²⁰

Safety of Maternal and Infant Use of Antiretroviral Drugs during Breastfeeding

Studied NNRTIs (nevirapine, efavirenz, and etravirine) get into breast milk, but to a lower extent than the levels in maternal plasma. Studied PIs (lopinavir, nelfinavir, ritonavir, indinavir, atazanavir) reach very low concentrations in breast milk, with little to no drug detectable in the blood of the breastfed infant.²¹ NRTIs show more variability than PIs and NNRTIs. Tenofovir disoproxil fumarate has very little transfer into breast milk, with no detectable drug concentration in the blood of the breastfed infant.²¹⁻²³ Emtricitabine and lamivudine have more accumulation in breast milk and can sometimes be detected in the blood of the breastfed infant (in 19% and 36% of infants, respectively).²¹ For more details on ARV passage into breastmilk, see the individual [drug sections in Appendix B](#).

A review of studies of women with and without HIV taking TDF during pregnancy found generally normal infant growth.^{21,24} One reviewed study showed a decrease in bone mineral content among the babies of mothers on combination ART (whether the mothers received tenofovir diphosphate (DP)-based ART or zidovudine-based ART) compared to the babies of mothers receiving zidovudine alone. Another study showed a decrease in bone mineral content among breastfeeding mothers receiving tenofovir DP-based ART compared to mothers who received no ART, but whether these findings will persist after discontinuation of breastfeeding is not known.²⁴

Serious adverse infant events associated with ART in breastfeeding mothers appear to be relatively uncommon. In two studies that compared the efficacy of maternal ART (zidovudine-based ART in one study and TDF-based ART in the other) to infant nevirapine prophylaxis with no maternal ART during breastfeeding for prevention of postnatal HIV transmission, no significant differences in adverse events were observed between study arms.^{10,14} One study reported that anemia occurred more frequently among infants who were exposed to zidovudine-based ART during breastfeeding than among infants who were not exposed to ART.²⁵ An infant who acquires HIV while breastfeeding is at risk of developing ARV drug resistance due to subtherapeutic drug levels in breast milk, especially if the breastfeeding woman develops viremia.^{26,27}

As noted above, extended infant ARV prophylaxis during breastfeeding has similar rates of serious adverse events compared to maternal ART. In one study, the rate of adverse events in infants receiving 6 months of nevirapine was not significantly different from those receiving nevirapine placebo. A second study comparing

two infant ARV prophylaxis regimens (lopinavir/ritonavir vs. lamivudine) found no significant difference in the rates of adverse events in infants receiving the two regimens.^{10-12,14} Studies to date have only examined short-term adverse events, and there is little data on whether there might be long-term consequences of these drug exposures.

Approach to Counseling and Management

Formula, banked donor milk, and milk from an HIV-negative wet nurse who has been properly screened remain the only completely reliable methods of preventing HIV transmission during breastfeeding. The Panel on Treatment of Pregnant Women with HIV Infection and Prevention of Perinatal Transmission recommends that women living with HIV in the United States not breastfeed their infants. However, patient-centered counseling on infant feeding must balance maternal psychosocial concerns, infant health benefits of breastfeeding, and risks of HIV transmission. Providers can initiate counseling with a nonjudgmental inquiry about infant feeding early in pregnancy, and then engage the mother by offering joint problem solving and shared decision making. One approach is to say to all pregnant women living with HIV “In the United States, we recommend formula feeding to avoid the risk of HIV transmission to your baby through breast milk. Do you have any questions or concerns about this?” For women who are considering breastfeeding, we recommend engaging each woman privately in a nonjudgmental conversation about the motivation behind her desire to breastfeed, as well as consultation with the clinician(s) who will be managing the infant’s care.

If, despite extensive counseling, a woman decides to breastfeed, harm-reduction measures should be taken to reduce the risk of HIV transmission. These include:

- Demonstrating maternal ART adherence and engagement in care both during pregnancy and throughout breastfeeding.
- Documenting consistent viral suppression prior to delivery and throughout breastfeeding. This can be accomplished by monitoring maternal plasma viral loads every 1 to 2 months during breastfeeding. If maternal viral load becomes detectable, consult an expert immediately.
- Breastfeeding exclusively for up to 6 months postpartum, followed by breastfeeding in combination with the introduction of complementary foods.
- Developing a plan for weaning with input from the family and providers. Rapid weaning over a few days is not recommended.
- Infants should receive at least 6 weeks of infant ARV prophylaxis with zidovudine and/or nevirapine. In non-breastfeeding infants, there is high quality evidence that 4 weeks to 6 weeks of infant prophylaxis with zidovudine prevents HIV transmission (see Antiretroviral Management of Newborns with Perinatal HIV Exposure of Perinatal HIV). The most extensively studied infant prophylaxis in breastfeeding infants is daily infant nevirapine, which has been shown to be safe and effective when used for extended prophylaxis in infants whose mothers are not receiving ART.^{11,14} If the mother is receiving ART, infant ARV prophylaxis can be discontinued after 6 weeks. Some experts in the United States have felt more comfortable with continuing infant ARV prophylaxis through 1 month after cessation of weaning, even when the mother is receiving ART. However, during the HPTN 046 trial, in which the mothers received ART, there was no difference in postnatal transmission when the infant received nevirapine or placebo, suggesting no additive effect.¹¹
- Monitoring the infant for HIV acquisition during breastfeeding. A reasonable approach to infant monitoring would include virologic HIV testing at the standard time points (see [Maternal HIV Testing and Identification of Perinatal HIV Exposure](#)) and then every 3 months throughout breastfeeding, followed by monitoring at 4 to 6 weeks, 3 months, and 6 months after cessation of breastfeeding.

- In the unlikely case of HIV transmission via breastfeeding, it is important to promptly initiate a full combination ARV treatment regimen for the infant. Resistance testing should be done on the infant viral isolate. If resistance is identified, the treatment regimen can be adjusted appropriately.
- Maternal mastitis and infant thrush should be promptly identified and treated, as both conditions increase the risk of HIV transmission through breastfeeding. Milk from the affected breast should be pumped and discarded until mastitis resolves.

The immediate postpartum period poses unique challenges to adherence to medical care and ART. Close follow-up and enhanced support services should be considered for women planning to breastfeed (see [Postpartum Follow-Up of Women Living with HIV Infection](#)).

Clinicians caring for a woman with HIV who is considering breastfeeding should consult with an expert and, if necessary, the Perinatal HIV Hotline (888-448-8765).

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